

**POLARIZATION DIVISION DUPLEXING WITH CROSS POLARIZATION
INTERFERENCE CANCELLER**

ABSTRACT OF THE DISCLOSURE

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[0043] A telecommunication system includes a transmitter configured to modulate a forward link RF carrier with a first set of data; a receiver configured to demodulate a second set of data from a return link RF carrier; an orthomode transducer having two linear ports and a circular waveguide port, where one of
10 the linear ports is connected as an input from the transmitter and another linear port is simultaneously connected as an output to the receiver; an antenna; and a linear-to-circular polarizer connected to the circular waveguide port and connected to the antenna, where the linear-to-circular polarizer is configured so that a first linear polarization at the circular waveguide port results in a first
15 circular polarization at the antenna and a second circular polarization at the antenna results in a second linear polarization at the circular waveguide port.